

## CLAIM AMENDMENTS

1. (currently amended) A system for sonic logging of an earth formation, comprising:  
a logging instrument adapted for disposal within a wellbore traversing the formation;  
at least one acoustic transmitter disposed on the logging instrument;  
at least one receiver adapted to detect acoustic signals disposed on the logging instrument;  
processor means adapted to process acoustic signals without stacking said signals to determine a coherence measure from acoustic signals detected by the at least one receiver and associated with the at least one transmitter actuations; and  
processor means adapted to directly average the determined coherence measure for a plurality of the at least one transmitter actuations to determine a property of the formation.
2. (original) The system of claim 1 wherein the processor means adapted to process the acoustic signals to determine a coherence measure includes a slowness time coherence calculation.
3. (original) The system of claim 1 wherein the processor means adapted to process the acoustic signals is further adapted to produce a coherence plot from the detected acoustic signals.
4. (original) The system of claim 1 wherein the processor means adapted to average the coherence measure is further adapted to produce an average coherence plot from the averaged coherence measure.
5. (original) The system of claim 1 wherein the logging instrument is adapted for disposal within the wellbore during the drilling of said wellbore.
6. (original) The system of claim 1 wherein the determined property is the slowness of the formation.
7. (previously amended) A system for sonic logging of an earth formation, comprising:

a logging instrument adapted for disposal within a wellbore traversing the formation;  
at least one acoustic transmitter disposed on the logging instrument;  
at least one receiver adapted to detect acoustic signals disposed on the logging instrument;  
processor means adapted to process acoustic signals without stacking said signals to determine a coherence measure from acoustic signals detected by the at least one receiver and associated with the at least one transmitter actuations; and  
processor means adapted to directly average the determined coherence measure for a plurality of the at least one transmitter actuations to determine a property of the formation.

8. (original) The system of claim 7 wherein the processor means adapted to process the acoustic signals to determine a coherence measure is adapted to calculate a slowness time coherence.
9. (original) The system of claim 7 wherein the processor means adapted to process the acoustic signals is further adapted to produce a coherence plot from the detected acoustic signals.
10. (original) The system of claim 7 wherein the processor means adapted to average the coherence measure is further adapted to produce an average coherence plot from the averaged coherence measure.
11. (original) The system of claim 7 wherein the logging instrument is adapted for disposal within the wellbore during the drilling of said wellbore.
12. (original) The system of claim 7 wherein the determined property is the slowness of the formation.
13. (currently amended) A method for sonic logging of an earth formation, comprising:  
(a) repeatedly actuating an acoustic transmitter on a well logging instrument disposed in a wellbore traversing the formation;

- (b) detecting acoustic signals with at least one receiver disposed on the instrument;
  - (c) determining a coherence measure from the detected acoustic signals associated with the at least one transmitter actuations without stacking said signals; and
  - (d) directly averaging the determined coherence measure for a plurality of the transmitter actuations to determine a property of the formation.
14. (original) The method of claim 13 wherein the determined property is the slowness of the formation.
15. (original) The method of claim 13 wherein step (c) includes calculating a slowness time coherence.
16. (original) The method of claim 13 wherein step (c) includes producing a coherence plot from the detected acoustic signals.
17. (original) The method of claim 13 wherein step (d) includes producing an average coherence plot from the averaged coherence measure.
18. (original) The method of claim 13 wherein the logging instrument is adapted for disposal within the wellbore during the drilling of said wellbore.
19. (previously amended) A method for sonic logging of an earth formation, comprising:
- (a) repeatedly actuating an acoustic transmitter on a well logging instrument disposed in a wellbore traversing the formation;
  - (b) detecting acoustic signals with at least one receiver disposed on the instrument;
  - (c) determining a coherence measure from the detected acoustic signals associated with the at least one transmitter actuations without stacking said signals; and
  - (d) directly averaging the determined coherence measure for a plurality of the transmitter actuations to determine the slowness of the formation.